



天线规格书

Antenna Specifications

深圳市三好无线通信有限公司

Shenzhen 3Good Wireless Communication Co., Ltd

客 户 Customer		亿道信息 Emdoor info	
客户型号 Customer Model		I10U	
物料编码 CS P/N		YD-I10U	
WIFI 1 天线编码 WIFI 1 Ant. P/N		YD-I10U-04	
版 本 Version		T:A	
制作日期 Date		2022.11.25	
编 制 Compiled	RF 审核 Checked by(RF)	结构审核 Checked by(MD)	核准/盖章 Approved
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1. 项目基本信息和图片： Information and pictures of the project

1.1 项目基本信息 Project Information

整机类型 Product type	直板智能机 Bar smart phone
天线材质 The antenna material	FPC
天线频段 Antenna band	BT/ 2.4G WiFi&5G WiFi
工作频率 Frequency range	2400Mhz-2500Mhz 5100Mhz-5850Mhz

1.2 手机外观及天线样品图 Cellphone and antenna samples photo



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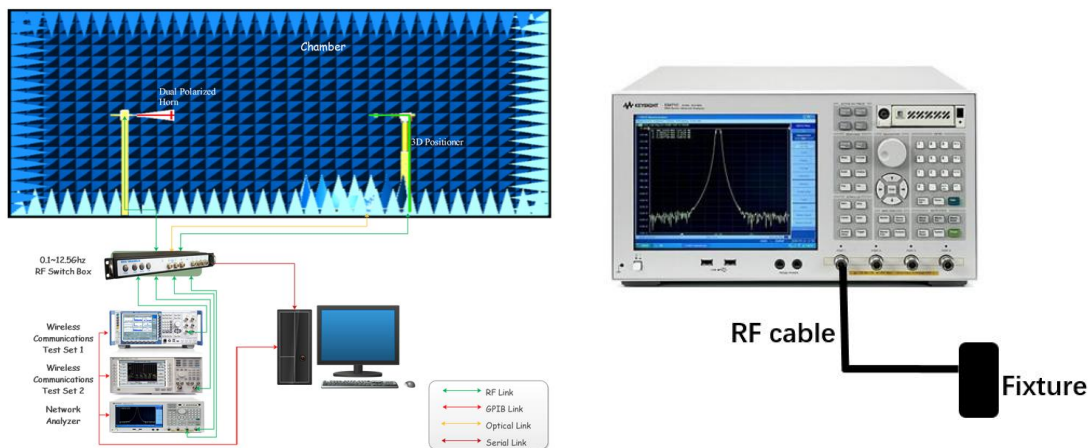
2. 电性能 Electrical performance

2.1 电性能项目 Electrical Properties

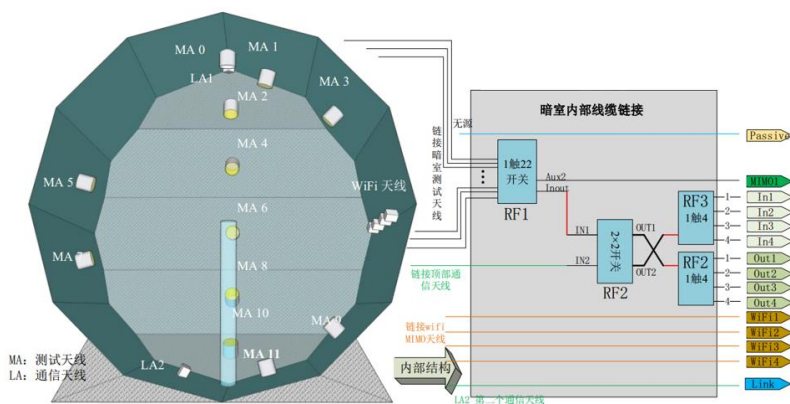
Passive Test	S11	VSWR/R.L/Simth Chart
	S21	Isolation
	S21	Effi./Gain
Active Test	TRP	Total Radiated Power
	TIS	Total Istropic Sensitivity

2.1.1 测试方法和测试设备 Test methods and test equipment

2.1.2 S11 TEST 测试



单探头测量系统 Single probe measurement system



多探头测量系统 Multi probe measurement system

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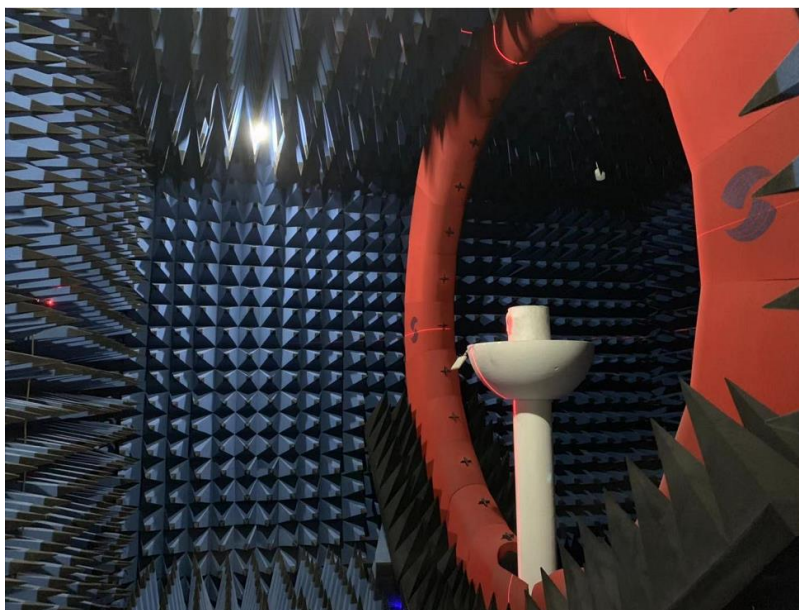
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2.1.3 测试暗室图片 Microwave anechoic chamber



微波暗室外部（暗室+机柜设备）

Anechoic chamber & Testing equipment



暗室内部

Inside of Anechoic chamber

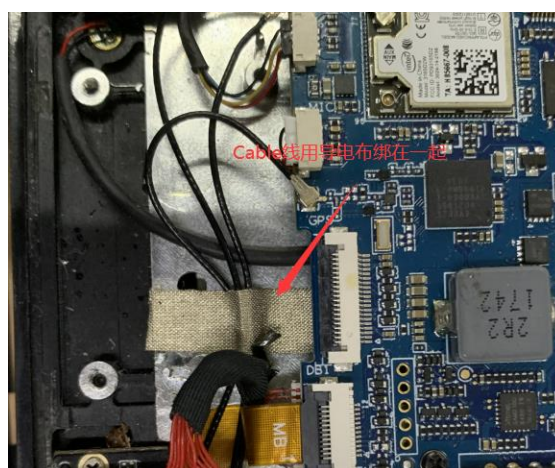
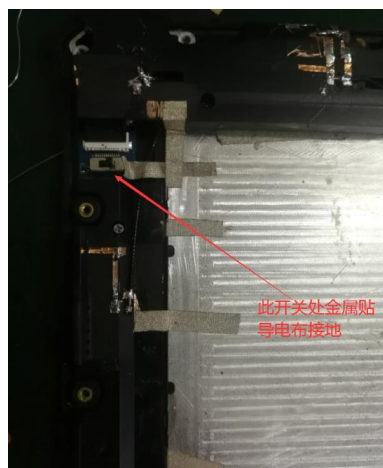
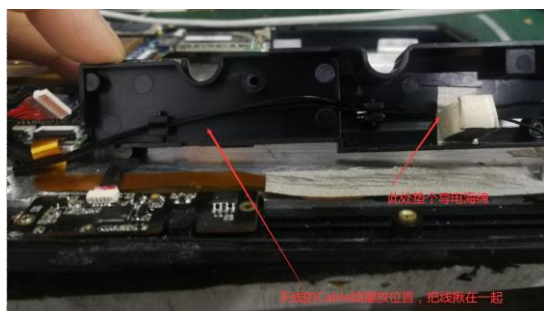
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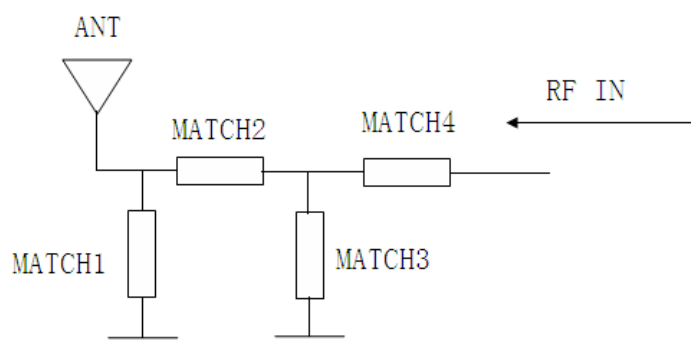
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3. 整机环境处理和天线匹配电路 Fixture environment and antenna matching circuit

3.1 环境处理 Fixture environmentAntenna



3.2 天线匹配电路 Antenna matching circuit



位号	MATCH1	MATCH2	MATCH3
值	NC	0Ω	NC

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4. 测试数据 Test data

4.1 无源测试数据 Passive test data

4.1.1 S11(VSWR/RL/Simth Chart) test data

NC

4.1.2 S21 (Effi./Gain) test data

WIFI AUX					
frequency	efficiency	frequency	efficiency	frequency	efficiency
频率(MHz)	效率	频率(MHz)	效率	频率(MHz)	效率
2400	41.23%	5100	45.52%	5485.1	46.50%
2410	42.52%	5120.3	45.62%	5505.4	45.25%
2420	42.31%	5140.5	46.52%	5525.7	46.52%
2430	43.48%	5160.8	47.52%	5545.9	47.65%
2440	43.52%	5181.1	48.52%	5566.2	47.25%
2450	42.67%	5201.4	48.25%	5586.5	48.52%
2460	43.72%	5221.6	49.50%	5606.8	46.52%
2470	43.52%	5241.9	45.25%	5627	45.52%
2480	43.85%	5262.2	46.25%	5647.3	42.52%
2490	43.52%	5282.4	47.15%	5667.6	42.15%
2500	43.04%	5302.7	46.52%	5687.8	43.62%
		5323	47.25%	5708.1	45.21%
		5343.2	48.25%	5728.4	44.15%
		5363.5	46.52%	5748.6	42.82%
		5383.8	45.18%	5768.9	41.52%
		5404.1	46.85%	5789.2	42.62%
		5424.3	43.85%	5809.5	42.18%
		5444.6	44.52%	5829.7	43.25%
		5464.9	43.82%	5850	41.85%

4.1.3 Radiation pattern

NC

4.2 有源测试数据 Active test data (trp/tis)

2.4G WIFI MIAN			
Band	Channel	TRP	TIS
WIFIB	1	10.21	
	6	10.42	
	13	10.75	-83.4

WIFI天线OTA测试报告					
Test Data: 2020年6月1日					
项目: 主天线		Performance request (性能要求)	结果	判定	备注
2.4G WiFi_11b_CCK_11M	TRP	$\geq 11\text{dbm}$	11.39	pass	
	TIS	$\geq -80\text{dbm}$	-82.96	pass	
2.4G WiFi_11g_OFDM_54M	TRP	$\geq 10\text{dbm}$	10.17	pass	
	TIS	$\geq -67\text{dbm}$	-68.81	pass	
2.4G WiFi_11n_20M_MCS7	TRP	$\geq 9\text{dbm}$	9.19	pass	
	TIS	$\geq -63\text{dbm}$	-65.21	pass	
5G WiFi_11a_54M	TRP	$\geq 10\text{dbm}$	10.52	pass	
	TIS	$\geq -65\text{dbm}$	-67.30	pass	
5G WiFi_11n_20M_MCS7	TRP	$\geq 9\text{dbm}$	9.40	pass	
	TIS	$\geq -63\text{dbm}$	-66.90	pass	

WIFI吞吐量测试		主辅天线合路测试			
I10U		模块型号: 3165		测试时间:	2020年6月1日09:40:56
2.4G WIFI (Mbps)					
WIFI距离模拟	模块	测试标准	上传速度 (BT OFF)	下载速度(BT OFF)	判定结果
1米	INTEL3165	>110	110	121	pass
	MT6625	>55	\	\	
	WCN3680B	>55	\	\	
20米	INTEL3165	>60	70	111	pass
	MT6625	>50	\	\	
	WCN3680B	>50	\	\	
30米	INTEL3165	>55	62	70	pass
	MT6625	>45	\	\	
	WCN3680B	>45	\	\	
5G WIFI (Mbps)					
WIFI距离模拟	模块	测试标准	上传速度 (BT OFF)	下载速度(BT OFF)	判定结果
1米	INTEL3165	>320	300	334	pass
	MT6625	>90	\	\	
	WCN3680B	>120	\	\	
20米	INTEL3165	$>200@DL, >100@UL$	135	245	pass
	MT6625	>85	\	\	
	WCN3680B	>110	\	\	
30米	INTEL3165	$>100@DL, >60@UL$	80	160	pass
	MT6625	>80	\	\	
	WCN3680B	>100	\	\	

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4.3 WIFI 场测 WIFI field test

	信道	距离	信号强度DB	实测强度	判断	备注
5G	36	5m	>-45	-37~-40	pass	
		10m	>-60	-44~-51	pass	
		20m	>-70	-46~-56	pass	
	100	5m	>-45	-35~-39	pass	
		10m	>-60	-42~-51	pass	
		20m	>-70	-45~-57	pass	
	157	5m	>-45	-38~-41	pass	
		10m	>-60	-44~-52	pass	
		20m	>-70	-47~-59	pass	
2.4G	1	5m	>-45	-36~-41	pass	
		10m	>-60	-40~-46	pass	
		20m	>-70	-45~-58	pass	
	7	5m	>-45	-37~-42	pass	
		10m	>-60	-40~-46	pass	
		20m	>-70	-45~-55	pass	
	13	5m	>-45	-35~-42	pass	
		10m	>-60	-42~-46	pass	
		20m	>-70	-45~-59	pass	

4.4 测试结论 Test conclusion

WIFI 实际测试性能 Ok

注意：本天线只适用于调试样机，任何主板版本有变更或者射频物料更改，手机配件（如麦克，屏，喇叭，马达等）有变动，都必须经过我司测试验证后方可使用

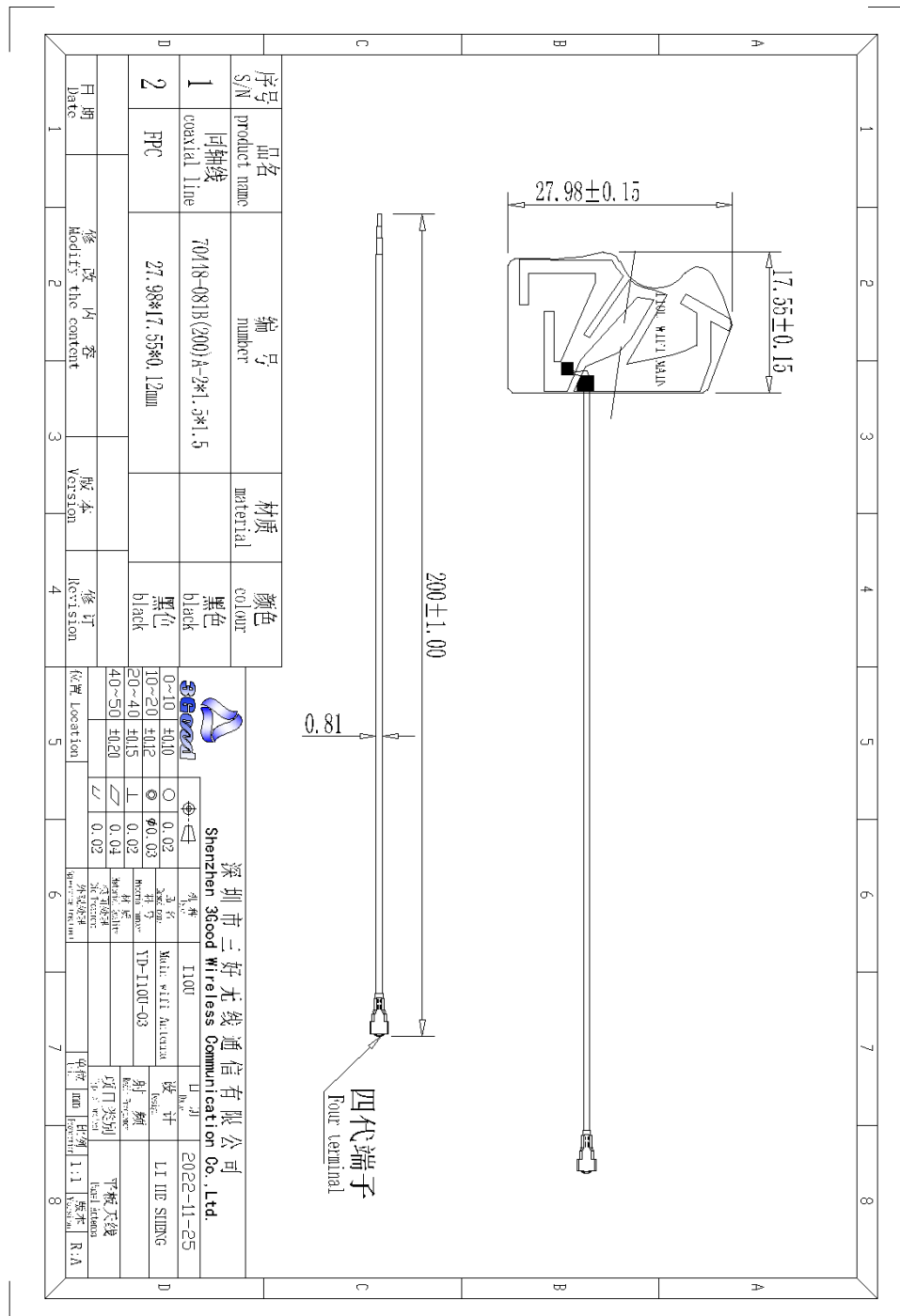
The WIFI field test performance is OK

Note: This antenna version is only applicable to the tested prototype.

If any version of the mainboard is changed or RF material is changed, and mobile phone materials and environment (such as microphone, screen, horn, motor, etc.) are changed, it must be tested and verified by our company before use

5. 工程图纸 Engineering drawings

5.1 WIFI 1 天线 WIFI 1 antenna



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6. 全尺寸检验报告 Dimension Report

尺 寸 检 验 报 告 Inspection report of the size

客户Customer		亿道 EmdoorINFO		项目project		I10U		
材质/料厚 Material/thickness		FPC		☒ 环保材料environmental material ☐ 非环保材料Non-environmental material				
功能或尺寸检查记录Inspection record of function or size								
NO	检查项目 inspect items	测量仪器 measuring instrument	检查结果inspection result					判 定 judgement
			1	2	3	4	5	
FM天线 FM antenna	27.98±0.15	卡尺 callipers	27.980	27.980	27.990	27.990	27.970	OK
	17.55±0.15	卡尺 callipers	17.550	17.540	17.550	17.540	17.550	OK
	200.0±0.5	卡尺 callipers	200.010	200.010	200.020	200.010	200.020	OK
	Φ0.81±0.05	卡尺 callipers	0.810	0.810	0.810	0.810	0.810	OK
	外观 appearance	目视 visual	OK	OK	OK	OK	OK	OK
总体判定Overall judgement: ☒ 合格qualified ☐ 不合格unqualified			不合格处理方式the disposal of unqualified parts: ☐ 冲压返工(修) Stamping rework (repair) ☐ 特采使用Special use					
备注remark:								
承认 approved by: 莫 宣 作成 made by: 周魏东								

	Frequency ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	
	Frequency (MHz)	2400.0	2410.0	2420.0	2430.0	2440.0	2450.0	2460.0	2470.0	2480.0	2490.0	2500.0	5150.0	5200.0	5250.0	5300.0	5350.0	5400.0	5450.0	5500.0	5550.0	5600.0	5650.0	5700.0	5750.0	5800.0	5850.0	
	Efficiency (dBi)	-4.34	-4.50	-4.88	-5.05	-5.10	-5.01	-4.89	-4.92	-4.97	-5.18	-5.07	-4.99	-5.04	-4.48	-4.95	-5.16	-5.09	-4.88	-4.74	-4.53	-4.66	-4.76	-4.84	-4.53	-4.66	-4.96	
	Gain (dBi)	2.44	2.17	1.55	1.46	1.11	1.33	1.29	1.37	0.79	0.50	0.57	1.50	0.71	2.75	2.40	0.94	0.25	0.81	0.82	1.25	0.53	1.44	0.63	1.21	0.76	0.56	
	Efficiency (%)	36.85	35.47	32.52	31.23	30.92	31.53	32.42	32.22	31.84	30.37	31.12	31.72	31.35	35.67	31.96	30.50	30.94	32.51	33.55	35.27	34.17	33.44	32.83	35.25	34.20	31.91	
	Directivity (dB)	6.78	6.67	6.43	6.51	6.21	6.34	6.18	6.29	5.76	5.68	5.64	6.49	5.75	7.23	7.36	6.10	5.34	5.69	5.56	5.78	5.20	6.20	5.47	5.74	5.42	5.52	
	Peak Gain Position (Theta)	76.00	76.00	75.00	74.00	74.00	74.00	25.00	26.00	24.00	24.00	25.00	46.00	91.00	119.00	94.00	126.00	69.00	41.00	71.00	67.00	52.00	51.00	53.00	106.00	64.00	55.00	
	Peak Gain Position (Phi)	17.00	17.00	17.00	17.00	15.00	15.00	329.00	329.00	322.00	320.00	320.00	222.00	94.00	103.00	298.00	107.00	230.00	242.00	228.00	198.00	242.00	244.00	244.00	71.00	187.00	244.00	
	Efficiency ThetaPol (%)	20.03	19.59	18.57	18.19	18.59	18.92	19.55	19.21	18.91	17.97	18.31	15.18	15.54	20.20	17.82	14.45	14.24	14.16	15.58	14.26	12.79	11.98	13.78	14.25	12.68		
	Efficiency PhiPol (%)	16.81	15.88	13.95	13.04	12.32	12.61	12.87	13.01	12.94	12.40	12.80	16.55	15.82	15.47	14.14	16.05	16.90	18.27	19.39	19.70	19.91	20.64	20.85	21.47	19.95	19.24	
Upper Hem. Efficiency (%)	22.43	21.64	20.54	20.13	20.43	21.05	21.54	21.36	21.13	19.87	20.49	17.48	17.47	20.03	17.87	17.87	18.25	18.24	19.00	19.78	19.21	18.89	18.96	20.38	19.74	18.48		
Lower Hem. Efficiency (%)	14.42	13.83	11.97	11.10	10.49	10.48	10.88	10.86	10.71	10.50	10.62	14.25	13.89	15.63	14.09	12.63	13.08	14.27	14.55	15.49	14.95	14.55	13.87	14.87	14.45	13.44		
T90(H)角度																												
	14.37	14.13	15.63	15.74	15.05	17.99	19.70	18.52	19.59	22.26	17.04	15.82	16.42	15.88	16.67	12.07	11.57	13.33	15.76	15.57	15.91	14.62	13.04	13.83	13.76	20.77		
Gain 15deg (dBi)																												
	96.00	95.00	94.00	95.00	98.00	99.00	98.00	98.00	103.00	103.00	103.00	38.00	22.00	24.00	45.00	25.00	23.00	24.00	83.00	34.00	28.00	70.00	101.00	36.00	35.00	46.00		
	E1(XZ)前后比																											
	5.00	5.83	6.55	6.98	6.64	6.63	7.73	7.34	5.98	5.57	5.01	5.62	4.36	6.31	6.50	4.96	4.46	4.39	3.39	10.43	9.13	10.80	10.79	11.89	11.13	8.02		
	E2(YZ)波瓣宽度																											
	38.00	37.00	35.00	21.00	59.00	61.00	60.00	38.00	21.00	32.00	30.00	78.00	125.00	89.00	97.00	103.00	86.00	23.00	42.00	60.00	65.00	67.00	68.00	63.00	65.00	83.00		
	E2(YZ)前后比																											
	7.65	7.50	7.67	7.37	7.47	7.65	9.12	10.77	11.48	11.30	11.12	1.16	0.25	5.07	5.40	6.57	6.06	2.09	7.84	5.78	2.49	3.02	4.25	6.33	5.60	1.66		
	仰角10度处轴比(A)轴比(B)																											
	12.63	11.64	10.14	9.14	49.40	5.29	17.10	15.23	13.87	18.06	19.88	19.29	18.72	6.64	14.86	5.42	37.60	20.34	15.26	10.64	21.78	23.80	25.41	16.45	13.98	13.01		
	仰角10度处轴比(A)轴比(B)																											
	52.65	95.89	52.82	48.70	56.46	56.67	48.69	55.32	50.13	48.85	57.45	72.39	67.38	45.53	58.43	52.09	51.43	45.84	50.38	50.81	51.72	56.89	61.37	54.74	63.24	46.91		
	Hc(XY)波瓣宽度																											
	56.00	56.00	54.00	51.00	50.00	27.00	38.00	45.00	44.00	45.00	46.00	44.00	16.00	27.00	23.00	25.00	15.00	39.00	27.00	15.00	15.00	69.00	47.00	25.00	13.00	27.00		
	Hc(XY)前后比																											
	5.98	6.02	6.07	6.57	6.60	7.08	7.13	6.36	6.16	5.51	4.64	0.10	0.22	0.00	0.75	1.33	1.33	0.51	0.84	0.94	0.00	0.30	0.74	1.93	2.90	3.22		
	左旋圆极化效率(%)																											
	15.22	14.52	13.26	12.84	15.65	11.40	15.40	16.57	18.69	17.45	17.32	13.85	13.61	16.76	15.27	18.45	19.56	19.39	16.92	14.97	15.70	14.95	14.33	14.98	15.34	12.78		
	右旋圆极化效率(%)																											
	21.62	20.96	19.25	18.38	15.27	20.13	17.02	15.65	13.15	12.92	13.80	17.87	17.74	18.91	16.69	12.05	11.38	13.12	16.63	20.31	18.47	18.49	18.50	20.27	18.96	19.12		
Empty																												

